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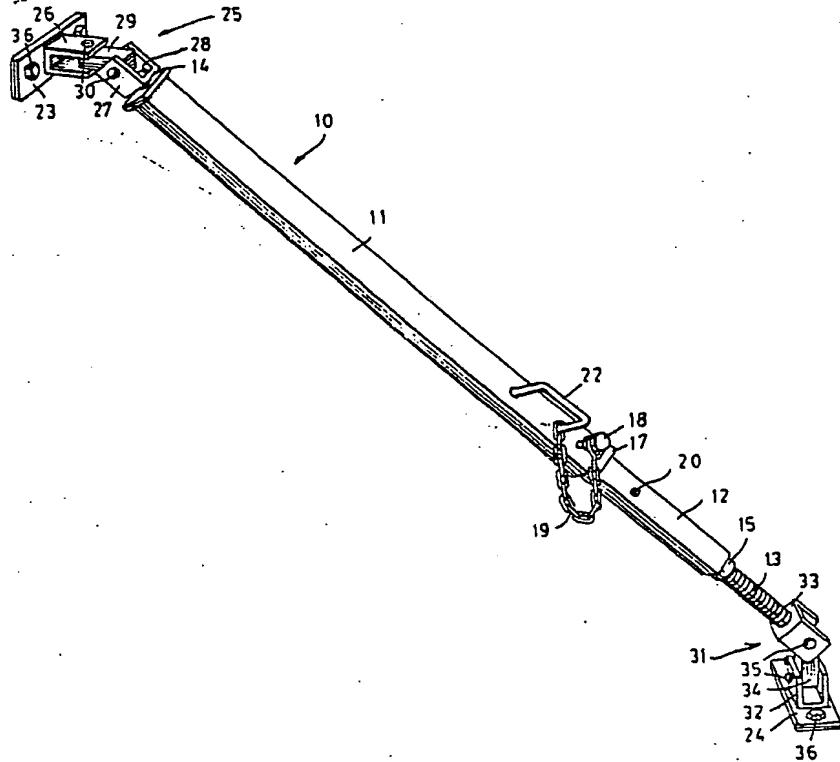
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(54) Title: ADJUSTABLE BRACE OR PROP

(57) Abstract

A prop body (10) has, in addition to its telescopically adjustable outer section (11) and inner section (12), a screw (13) threadedly engaged in the distal end of the inner section (12). Sole plates (23, 24) are connected to the ends of the body (10), one sole plate (23) being connected rotatably to the outer telescopic section (11), the other sole plate (24) being non-rotatably connected to the screw (13). With the screw (13) held against rotation of its sole plate (24), the telescopic sections (11, 12) can be rotated in one direction or the other for screw-threaded extension or retraction of the prop body (10). Either or each sole plate (23, 24) may be connected to the prop body (10) by a universal joint (25, 31) so the prop can be used as a compression or tension member between surfaces to one or both of which it is oblique.



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TITLE: ADJUSTABLE BRACE OR PROP

BACKGROUND OF THE INVENTION

(1) Field of the Invention

This invention relates to an improved adjustable brace or prop.

(2) Description of the Prior Art

Adjustable braces or props are well known and widely used in the building industry, such a device having an adjustably extensible body of two main parts telescopically interfitted, each having an apertured sole plate fixed to its outer end. The inner body part may be releasably locked in any of a number of adjusted positions by a retaining pin passed through longitudinal slots in the outer body part and round holes in the inner part and bearing against a nut engaged on a threaded portion of the outer body part, fine adjustment to the length of the device being obtained by rotation of the nut by means of an appropriate tool.

These articles, although very extensively used, have certain disadvantages. They can be used for angle bracing only with difficulty, this involving the installation of wedging blocks or the like, and their adjustment is rather laborious and time consuming.

The present invention has been devised with the general object of providing a brace, prop or strut of the general type set out which is far more versatile in its applications than those previously used, and which can be very quickly and easily adjusted for effective length. Other objects achievable in preferred embodiments of the invention are to provide such a device which can be used in tension as well as in compression, and which is simple and economical to manufacture, though particularly sturdy and durable in use.

BRIEF DESCRIPTION OF THE INVENTION

With the foregoing and other objects in view,



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the invention resides broadly in a prop of the type having a telescopically extensible or retractable body with sole plates at its extremities wherein the body includes a first end section, a second end section, an intermediate section telescopically engaged with the first end section and screw-threadably engaged with the second end section, means for releasably locking the intermediate section in selected slidably adjusted positions relative to the first end section, means for restraining the intermediate section against rotation relative to the first end section, means for connecting the distal end of the first end section rotatably to a first sole plate and means for connecting the distal end of the second end section non-rotatably to a second sole plate.

The first end section may be of square cross-section in which intermediate section, also of square cross-section, is slidably but non-rotatably engaged, a retaining pin through the sleeve and selected holes through the intermediate section releasably holding the two parts in desired telescopic adjustment; or the two parts may be of round section, the retaining pin then serving also to restrain one part against rotation relative to the other. A universal joint may be provided to connect the first end piece rotatably to the first sole plate, and a similar joint may be used for the non-rotatable connection of the second end piece to the second sole plate. After the prop has been brought to approximately required length by telescopic adjustment of the first end section and the intermediate section, final screw-threaded adjustment may be quickly obtained by rotation of the first end section by means of a handle, the second end section being restrained from rotation by its connection to the second sole plate.



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In order that the invention may be readily understood and carried into practical effect, reference is now made to the accompanying drawings, wherein:-

5 FIG. 1 is a perspective view of a prop according to the invention applied as an oblique stay or brace,

FIG. 2 is a sectional detail drawing showing parts of the prop,

10 FIG. 3 is a side elevation of a prop according to a modification of the invention, and

FIG. 4 is a side elevation of a further modified form of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

15 Referring initially to FIGS. 1, 2 and 3 of the drawings, the telescopically adjustably body 10 of the prop includes a first end section or sleeve 11, an intermediate section 12 and a second end section or screw 13.

20 The sleeve 12 is a square-section metal tube with a capping plate 14 welded on its upper end.

25 The intermediate section 12 is a square-section metal tube slidably engaged in the sleeve 11 and having a sturdy cylindrical nut 15 welded to its lower or extended end. At its upper or enclosed end the intermediate section 12 has a limit piece 16 fixed on one of its faces and, when the intermediate section is fully extended, the limit piece is brought onto a stop piece 17 welded across the bottom of the corresponding face of the sleeve 11 and extending inwards for a short distance. Thus the intermediate section is prevented from being withdrawn from the sleeve.

30 The intermediate section 12 of the body is releasably retained in desired telescopically adjusted position relative to the sleeve 11 by means of a retaining pin 18, on a keeper chain 19, passed through



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a hole in one side of the sleeve 11, through any selected one of a series of pairs of opposed holes 20 in the intermediate section 12, and threadedly engaged in an axially bored and tapped boss 21 on 5 the sleeve 11.

The second end section or screw 13 of the body 10 is engaged in the nut 15 of the intermediate section 12. By means of a handle 22 on the sleeve 11, this sleeve and the intermediate section 12 engaged in it 10 may be quickly and easily rotated so that, if the screw 13 is restrained against rotation, the effective length of the body 10 will be increased, when the sleeve is rotated in one direction, and decreased with rotation in the opposite direction.

15 A top sole plate 23 is connected to the upper end of the body 10, rotatably about the axis of the device, and a bottom sole plate 25 is connected non-rotatably to the lower end of the body.

In the embodiment shown in FIG. 1 the top sole 20 plate 23 is connected to the top of the sleeve 11 of a universal joint indicated generally at 25, and consisting of a yoke 26 welded to the top sole plate 23, a further yoke 27 rotatable on a pivot 28 fixed to the capping plate 14 of the sleeve 11, and a connector piece 29 25 having its ends engaged on pivots 30, at right angles to each other, between the arms of the two yokes 26 and 27.

The bottom sole plate 24 is connected non-rotatably to the bottom of the screw 13 by a similar universal 30 joint 31, consisting of yokes 32 and 33 welded respectively to the bottom sole plate 24 and the screw 12, and a connector piece 34 with its ends engaged on pivots 35 between the arms of the two yokes and at right angles.

35 The two sole plates 23 and 24 are apertured to accept bolts 36, or screws, nails or other fasteners, by



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means of which the sole plates may be secured in place.

As shown in FIG. 1, this prop may be used as an oblique brace, the bottom sole plate 24 being bolted to a horizontal surface, the top sole plate 23 being bolted to a vertical wall after the sleeve 11 and the intermediate section 12 of the boss 10 have been telescopically extended or retracted to an appropriate length and locked by the retaining pin 18, final adjustment of the prop being obtained by using the handle 22 to rotate the sleeve 11 and the partly enclosed intermediate section 12 relative to the screw 13. Although this final adjustment will usually be such as to cause the application of compressive force by the prop, the device may serve equally well as a tension member if necessary or desirable.

The embodiment shown in FIG. 1 is of course usable also as a vertical prop if it is not required to resist tilting, and it may be used as a jack for raising or lowering a structure supported thereby.

In the modified form of the invention shown in FIG. 3, the universal joints are dispensed with, the bottom sole plate 24 being welded to the bottom of the screw 13, a yoke 37 rotatably mounted the top of the sleeve 11 as before described having its arms welded to the top sole plate 23. In this form of the invention both sole plates are preferably more or less square rather than rectangular as shown in the embodiment of FIG. 1.

In the embodiment of the invention shown in FIG. 4, the sleeve 11a and the intermediate section 12a of the body 10a are both of round-section tube, the retaining pin 18a being relied on to prevent relative rotation of the slidably interfitted parts as well as to hold these in telescopically adjusted relationship. The



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form of the invention shown in FIG. 4, with the bottom sole plate 24a welded to the screws 13a and the top sole plate 23a connected rotatably to the top of the sleeve 12a by a universal joint 25a as before described, may be used to support an inclined structure or formwork above a horizontal surface.

Any of the embodiments illustrated may also be used horizontally, for staying the sides of a trench, for example.

Props according to the invention will be found to be very effective in achieving the objects for which they have been devised. It will, of course, be understood that the embodiments of the invention herein described and illustrated may be subject to many modifications of constructional detail and design, which will be readily apparent to persons skilled in the art, without departing from the scope and ambit of the invention hereinafter claimed.



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CLAIMS

1. A prop of the type having a telescopically extensible or retractable body with sole plates at its extremities wherein the body includes:

a first end section,

a second end section,

an intermediate section telescopically engaged with the first end section and screw-threadedly engaged with the second end section,

means for releasably locking the intermediate section in selected slidably adjusted positions relative to the first end section,

means for restraining the intermediate section against rotation relative to the first end section,

means for connecting the distal end of the first end section rotatably to a first sole plate, and

means for connecting the distal end of the second end section non-rotatably to a second sole plate.

2. A prop according to Claim 1 wherein:

the means for connecting the distal end of the first end section rotatably to the first sole plate is a universal joint.

3. A prop according to either of the preceding claims wherein:

the means for connecting the distal end of the second end section non-rotatably to the second sole plate is a universal joint.

4. A prop according to any one of the preceding claims wherein:

the means for releasably locking the intermediate section in selected slidably adjusted position, and against rotation, relative to the first end section includes a retaining pin engageable through the first end section and through any selected one of a series of holes through the intermediate section.



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5. A prop according to any one of the preceding claims wherein:

an outwardly extending handle is secured to the first end section to facilitate its rotation and that of the intermediate section engaged therewith.

6. A prop substantially as herein described with reference to FIGS. 1 and 2 of the accompanying drawings.

7. A prop substantially as herein described with reference to FIGS. 2 and 3 of the accompanying drawings.

8. A prop substantially as herein described with reference to FIG. 4 of the accompanying drawings.



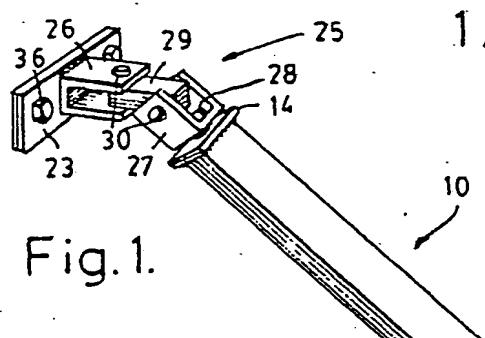


Fig. 1.

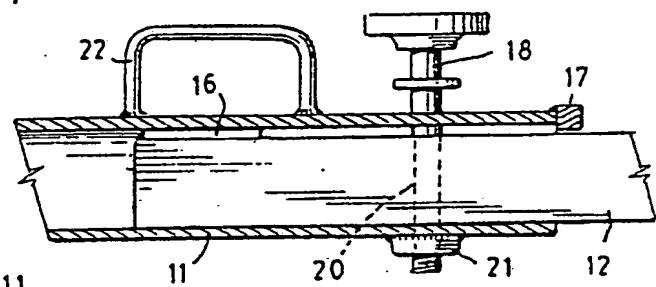


Fig. 2.

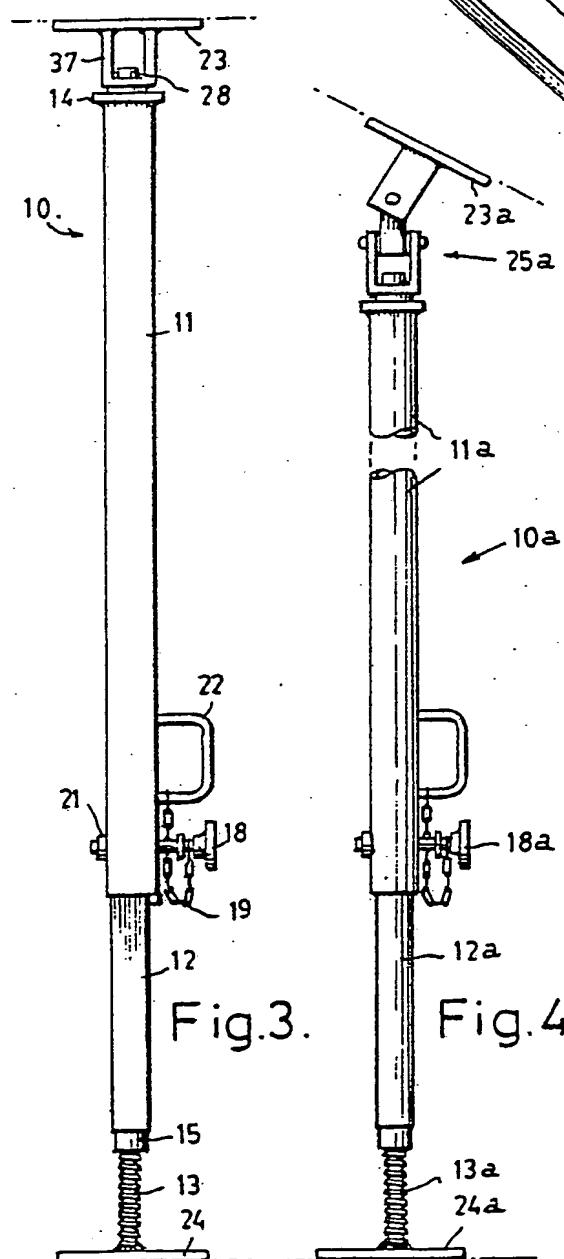


Fig. 3.

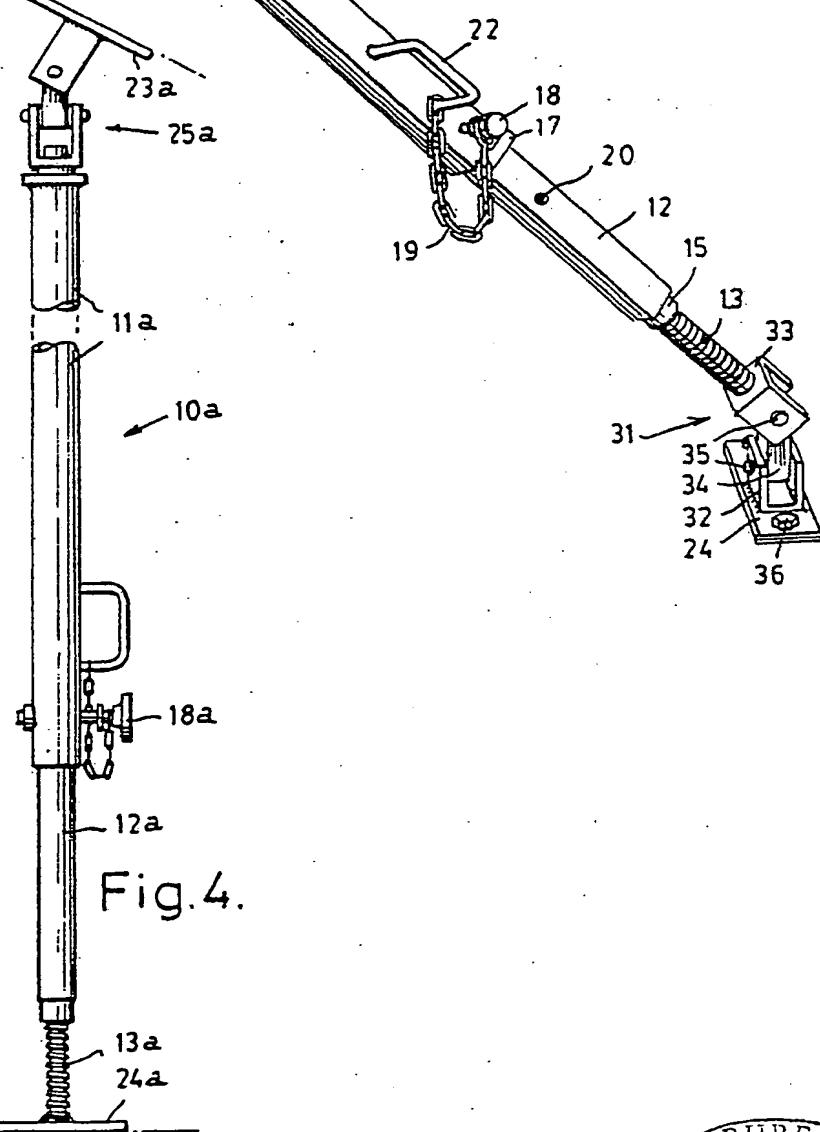


Fig. 4.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/AU83/00019

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ³

According to International Patent Classification (IPC) or to both National Classification and IPC

Int. C13 E04G 25/06

II. FIELDS SEARCHED

Minimum Documentation Searched ⁴

Classification System	Classification Symbols
IPC(3)	E04G 25/06

Documentation Searched other than Minimum Documentation
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AU : IPC as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴

Category ⁶	Citation of Document, ¹⁵ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
X	US,A,3655161 (SCHUELER) 11 April 1972 (11.04.72)	1
X	FR,A,1429913 (RISPLER) 17 January 1966 (17.01.66) See Figure 1 with associated description	1
X	DE,A, 801537 (BURKHARDT, JOCKS) 5 April 1951 (05.04.51) See Figure 1.	1
A	US,A, 2504291 (ALDERFER) 18 April 1950 (18.04.50) See Figure 1	1
A	GB,A, 1187586 (TUBECLAMPS) 8 April 1970 (08.04.70) See Figures 1 and 4.	1
A	GB,A, 926882 (DAVID ROBERTS) 22 May 1963 (22.05.63)	1

* Special categories of cited documents: ¹⁵

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IV. CERTIFICATION

Date of the Actual Completion of the International Search ¹

23 February 1983 (23.02.83)

Date of Mailing of this International Search Report ²

25 February 1983 (25.02.83).

International Searching Authority ¹

AUSTRALIAN PATENT OFFICE

Signature of Authorized Officer ¹⁰

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